

nerves should be determined by means of serial sections. Rather too much this to expect from the ordinary student! especially when it is seen that the classification discriminates between five systems (viz.—somatic-afferent and -efferent, viscerio-afferent and -efferent, and acustico-lateral) “each delimited by a uniformity of peripheral termination and a special characteristic origin in the brain,” and each liable to “appear in a variable number of cranial nerves as a component of those nerves.” Our authors tell us they have adopted this method for the plaice, and in proceeding to the systematic description of its cranial nerves they deal with them in order of functional association. The olfactory, optic and eye-muscle nerves are first considered; then the fifth and seventh; after the study of their root-ganglia, the eighth, ninth and tenth, completing the series. With the spinal nerves, the fourth is described first, and the first three later in order of succession, because they are less typical and by virtue of their especial relationships to the pectoral member. It is impossible here to go more fully into the details of this very technical subject; suffice it to say that all is most admirably set forth, and that while a really good description of the sympathetic system is given which may serve as a model to writers of the future, both the giant cells of the cord and the most recently revived Reissner's fibre are described and discussed with full bibliographic treatment. Special discussion is given to the question of the innervation of the pelvic member, in its bearings on translocation and nervous substitution, as a guide to homology. The authors' arguments under this head have an especial interest, in the recent announcement by Dr. A. Smith Woodward of the startling discovery that, in Cretaceous times, teleostei of the clupeoid type had already translocated the pelvic fin into the jugular position.

Following this are sections dealing with the sense organs. Kyle's discovery of a pleuronectid with a nasopharyngeal aperture and Holt's “recessus orbitalis” meet with due recognition, and here again all is admirable and fully up to date. The aforementioned thesis on asymmetry is conveniently introduced at this point, and there follow sections on the ear and reproductive organs, with a *résumé* of the present state of our knowledge concerning the sexual organs of the female teleosts in general, in which Huxley's terminology is employed.

The book closes with an appendix, containing valuable information on spawning and the spawning season, on the maturation and structure of the egg, on oviposition, fertilisation, development and metamorphosis. Rate of growth, the nature and causes of migration and distribution, are duly dealt with, and there follows a brief sketch of the plaice fishery in northern European waters, with some sound advice to the practical fisherman. In not a few pages in the book there are hints as to the work of the future, as, for example, at the very outset, where there are described a sporozoon and a myxosporidian yet to be determined.

Of the eleven plates, all are admirably clear, and figures useful as are those of the cranial nerves, the olfactory sacs and the sympathetic system are most welcome. It is well known that in the production of this series of memoirs the cost of illustration has been

largely defrayed by private donation. In the present case the publication committee of the Victoria University have performed this graceful task, and we congratulate its members upon their bargain. A better treatise on a single animal form there hardly exists, and while we would tender to editor, authors and all interested or concerned our heartiest thanks, we cannot refrain from an expression of national pride, in the extent to which it is evident from the pages of this work that the science of comparative ichthyology is essentially English. The book reflects the influence of the schools in which its authors were trained, and is a credit to them and to science in Britain. Our only fear concerning it is that it will be found too voluminous for the mere student, of whom so much is expected in so short a time. There is a danger that at first glance he would be repelled by the great amount of detail, and that thereby the subject of zoology might suffer. Selection can, however, always be arranged under a competent teacher, and for those desirous of specialising in ichthyology we could recommend nothing better. The book is healthy in the extreme, and while it will educate the student on sound lines, it will arouse in him the desire for reinvestigation and research, no opportunity of directing attention to which has been lost.

THE GOLD OF OPHIR.

The Gold of Ophir: Whence Brought and by Whom?

By A. H. Keane. Pp. xviii + 244. With one plate and one map. (London: Stanford, 1901.) Price 5s. net.

IN the little volume before us Prof. A. H. Keane has undertaken an inquiry into the vexed question of the site of Ophir, and the source of the gold which the Hebrew Scriptures assure us was brought from that place to Solomon, son of David, by ships of Tarshish. The author himself feels that some apology to the reader is necessary, and that some explanation is due to him for having taken up the subject at all, and it is our duty to say at the outset that we wish he had left it for discussion to the class of people who triumphantly assert that Rhodesia is Ophir, and that Britons inherit this colony (which was founded by masterful Mr. Rhodes) as their natural right because they are descendants of some of the tribes of Israel. Prof. Keane thinks that so much evidence has accumulated on the subject during the last thirty years that it is time the question was reopened, and not only reopened, but decided once and for all. The evidence he refers to consists of the results obtained from the exploration and study of Rhodesian remains, from the Himyaritic inscriptions found in central and southern Arabia by Glaser and others, and from the explorations of the “Arabian frankincenseland” by the late Mr. Bent, and from parallels between the social and religious customs of the Malagasy inhabitants of Madagascar and “their Himyaritic, Phœnician and Jewish masters from the northern hemisphere.” Incidentally we may mention that Dr. Carl Peters, in 1901, enunciated the extraordinary view that, not only was the site of the Ophir of the Bible to be found in Rhodesia, but that Ophir was to be identified with the Punt of the Egyptian inscriptions.

Prof. Keane has devoted several chapters of his little

book to attempting to prove his theories by appeals to facts philological and geographical; but all that can be said for his arguments is that if every assumption is correct, the deductions which he makes may be true, but if almost any one of them breaks down, his whole fabric must collapse. For example, Prof. Keane says unhesitatingly,

"the original Punt was South Arabia (Arabia Felix, Yemen), whence the name was extended to Somaliland during the eighteenth dynasty, say, about 1700 B.C."

But this is impossible, for in the sixth dynasty Punt was in Africa, and was probably reached by way of the Nile; and as the inscription of Her-khuf, formerly at Aswân and now at Cairo, contains the oldest mention of Punt in such a way that its position can be traced, we see at once that, so far as this remote period is concerned, Prof. Keane has no satisfactory authority for his statement, "the original Punt was South Arabia." The Punt of the eighteenth dynasty was reached in exactly the same way as it was reached in the reign of Seânkhka Râ (eleventh dynasty), and all the Egyptological evidence available goes to show that the region visited by the Egyptians at both periods was in Africa.

Prof. Keane thinks little of the evidence which Dr. Peters has deduced from the "*ushabte* figure impressed in a mould" which he found in the middle of Africa during his last expedition, yet he accepts the description given of it to the effect that it has "in each hand a scourge instead of a hoe." If the figure is an *ushabti* figure, and was really made in ancient days in a region far to the south of Egypt "for a courtier of Thothmes III.," the objects in the hands must have been intended to represent the flail and the hoe of Osiris, otherwise the whole figure is meaningless. In any case, how can it have a curious significance (p. 35) because "it is armed with a scourge in each hand, and [was] picked up in a mining district"? Let us hope that this wonderful figure may be placed somewhere so that it may be inspected by those interested in the matter.

Prof. Keane relies too much upon the statements of the late Mr. Bent in the deductions which he makes about the ruins at Zimbabwe, and this is the case also in respect of the views of the Hon. A. Wilmot, who wrote a volume entitled "*Monomotapa*," and who adopted nearly all Mr. Bent's views. Mr. Bent was an intrepid traveller and an accomplished gentleman, but he knew no Semitic language and his training as an archæologist was rather classical than anything else; his opinion on all Phœnician matters was, therefore, that of an intelligent but untrained amateur.

Our want of space prevents the possibility of discussing many of Prof. Keane's philological dicta, and we must pass on to his

"important conclusions," which he trusts "may now be considered fairly well established, and may therefore legitimately take the place of the many theories and speculations hitherto current regarding the 'Gold of Ophir,' its source and forwarders" (p. 194).

These are:—Ophir, on the south coast of Arabia, *i.e.* Moscha, or Porters Nobilis, was the distributing market of the gold of Havilah, or Rhodesia. The mines of

Rhodesia were first worked by South Arabian Himyarites, who were followed in the time of Solomon by the Jews and Phœnicians, and these very much later by the Moslem Arabs and Christian Portuguese. Tarshish was the outlet for the precious metals, and was near the modern Sofala. The Himyarites and the Phœnicians reached Havilah through Madagascar, where they maintained commercial and social intercourse with the Malagasy natives. With them were associated the Jews, by whom the fleets of Hiram and Solomon were partly manned. There is, of course, something to be said for all these views, because each represents a possibility, but the facts required to prove them are wanting. Nevertheless, Prof. Keane's book is as valuable as it is interesting, because it has put the question on a scientific base, and we are glad to see that he has freed himself from the ordinary traditional trammels in dealing with it. Moreover, we must acquit him of all mercenary motives in trying to prove that the gold which Hiram and Solomon's fleets obtained from Ophir came from Rhodesia, for so far as we know, he has no pecuniary interest in the mining operations which have been carried on in that wonderful country during recent years. The "notes" which he gives will be very useful to other workers in the same field, and his index facilitates the profitable perusal of the present book.

EXPERIMENTAL WORK WITH GASES.

The Experimental Study of Gases. By Morris W. Travers, D.Sc. With preface by Prof. W. Ramsay, D.Sc., F.R.S. Pp. xii + 323. (London: Macmillan and Co., Ltd., 1901.) Price 10s. net.

IN 1857, Robert Bunsen published the first edition of his classical work "*Gasometrische Methoden*," and twenty years later a rewritten and enlarged edition of the same, which still ranks as a standard text-book on the subject. We think it is not too much to say that since that date no more important work has been published on the properties of gases in general than the one now before us. The progress made in our knowledge of the subject has probably been at least as rapid as in any other department of chemistry, and the discovery within the last half-dozen years of five new elementary gases, in the investigation of the properties of which Dr. Travers has taken a prominent part, would alone afford justification for this volume, did it contain nothing else of merit.

The volume consists of 320 pages, with numerous illustrations, most of which appear to be original and not merely reproductions from current text-books. The first portion of the book is taken up with a detailed description of the apparatus used, and the methods employed in the preparation of gases in a state of purity and their accurate measurement and analysis. Then follow chapters on the gases of the helium group, the determination of density and the relations of pressure, temperature and volume, the liquefaction of gases, and finally their properties and the constants relating to them. Careful perusal of the work leads us to the impression that in this case (as is by no means always the rule) the best chapters are those on the subjects with which the